Reviewer's report

Title: Short sleep duration and obesity among Australian children

Version: 1 Date: 22 June 2010

Reviewer: Sanjay Patel

Reviewer's report:

Major Compulsory Revisions

1. The authors seek to assess the cross-sectional association between parental report of sleep duration and adiposity using an age-adjusted obesity threshold in a cohort of children from South Australia. They postulate there may be an age by sleep interaction such that the effect of short sleep on obesity risk wanes with age above 10. However, their analysis presents results stratified by age 5-12 and age 13-15 rather than the a priori hypothesis of comparing age 5-10 and 10-15 strata. The a priori hypothesis should be tested and presented in Table 2. If the authors then wish to demonstrate the results at another breakpoint, that is fine but it should be done in the setting of clearly describing to the reader that this was done post-hoc and as such, the results should be viewed as exploratory.

2. Given that tests for interaction are often underpowered, it would be useful if the authors could provide the actual p-values for formal interaction tests either in the text or Table 1 rather than simply stating they were not significant so that the reader can assess if any evidence for a trend is apparent.

3. The authors appear to misinterpret their findings in the Discussion. For example, they report a significant association in boys but not girls suggesting short sleep may have a more important effect in boys. However, they found no significant difference between boys and girls in a formal test for interaction and in fact, used this to justify combining data across genders for the testing of age and physical activity interaction effects. The appropriate interpretation of these results would be that there is an association between short sleep and obesity in their overall cohort and although a trend was seen for a stronger effect in boys than girls, no significant difference was found between the two groups. Similar alterations in the discussion regarding the presence of an age interaction effect should be made.

4. For the sleep by physical activity analyses, the authors state an additive interaction was found between sleep and physical activity. However, the Methods section only describes testing for a multiplicative interaction. Please provide the methods used to test for an additive interaction and the p-value associated with this test.

Minor Essential Revisions
1. Standard errors should be provided for the odds ratios presented in Figure 2.

Discretionary Revisions
None.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.